

## ABSTRACT OF THE DISCLOSURE

[82] An aerial imaging system has an image storage medium locatable in an aircraft, a controller that controls the collection of image data and stores it in the storage medium and a digital camera assembly that collects image data from a region to be imaged. An inertial measurement system (IMU) is fixed in position relative to the camera assembly and detects rotational position of the aircraft, and a GPS receiver detects absolute position of the aircraft. The camera assembly includes multiple cameras that are calibrated relative to one another to generate compensation values that may be used during image processing to minimize camera-to-camera aberrations. Calibration of the cameras relative to the IMU provides compensation values to minimize rotational misalignments between image data and IMU data. A modular camera assembly may also be used that allows multiple camera modules to be easily aligned, mounted and replaced.